

**CAMBRIDGE**

**Example Practice Papers for  
Cambridge IGCSE® Mathematics Core Practice Book**

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# CAMBRIDGE

NAME

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Cambridge IGCSE Mathematics Core Practice Book

Example Practice Paper 1

1 hour

**PLEASE NOTE: this example practice paper contains *exam-style* questions only**

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## READ THESE INSTRUCTIONS FIRST

Answer **all** questions.

Working for a question should be written below the question.

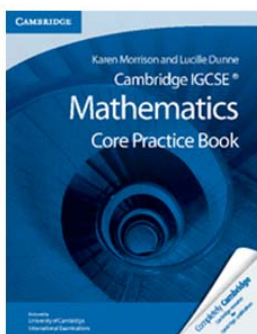
If the answer is not exact but a degree of accuracy has not been provided, give the answer as follows:

- to three significant figures for all values, except
- to one decimal place for degrees
- for  $\pi$ , use either your calculator value or 3.142.

The number of marks is given in brackets [ ] next to each question or part question.

The total of the marks for this paper is 56.

**PLEASE NOTE: this practice examination paper has been written in association with the below publication and is not an official exam paper:**



Paperback 9781107609884

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1 (a) Calculate  $\frac{97.54 - 31.6}{216.9}$

Answer(a) ..... [1]

(b) Write 216.9 in standard form.

Answer(b) ..... [1]

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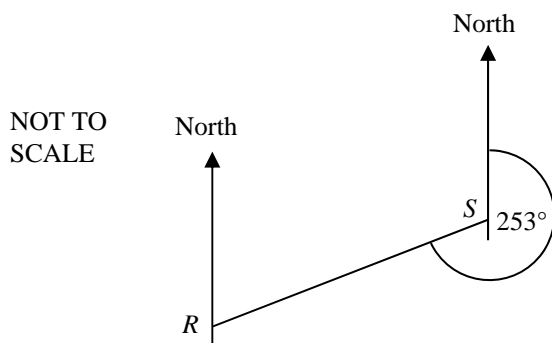
2 Write the following in order, starting with the smallest.

$\frac{4}{11}$       0.357      35%

Answer ..... < ..... < ..... [1]

---

3



The bearing of  $R$  from  $S$  is  $253^\circ$ .  
Work out the bearing of  $S$  from  $R$ .

Answer ..... [2]

---

4 In a sale, all prices are reduced by 33%.  
What is the sale price of a television that cost \$650 before the sale?

Answer ..... [2]

---

2

5 Simplify the following

(a)  $3a^2 \times 8a^4$

Answer(a) ..... [2]

(b)  $\frac{3b^3 \times 8b^{-4}}{6b^5}$

Answer(b) ..... [2]

---

6 Work out the value of  $5\frac{3}{5} \div 1\frac{2}{3}$ .

**Show all your working** and leave your answer as a fraction.

Answer ..... [2]

---

7 Work out the following.

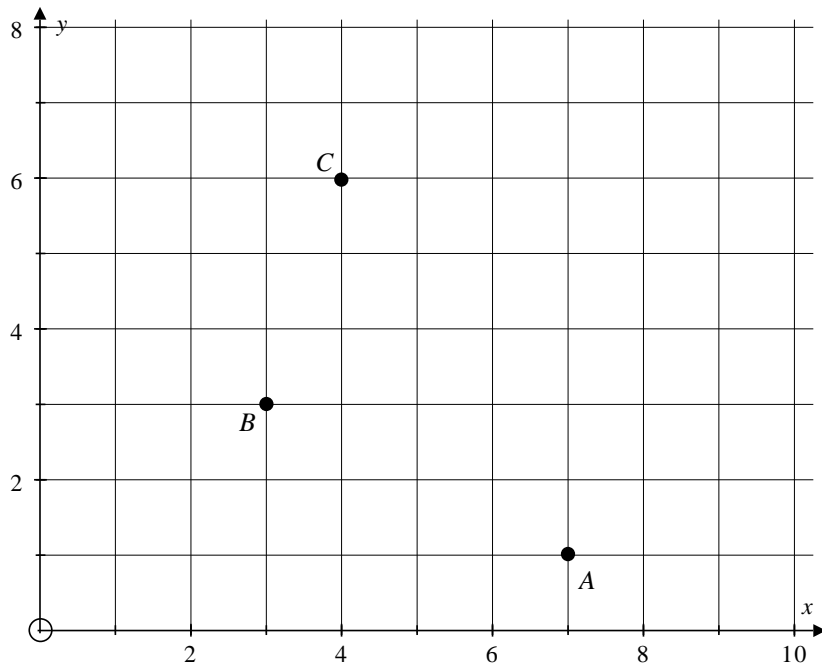
(a)  $3 + 18 \div 3 - 2$

Answer(a) ..... [1]

(b)  $2 + 3 \times 7 - 4 \div 8$

Answer(b) ..... [1]

---



Points  $A$ ,  $B$  and  $C$  are shown on the grid.

(a) Write  $\overrightarrow{BA}$  as a column vector.

Answer(a)  $\overrightarrow{BA} = \begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$  [2]

(b)  $D$  is another point such that  $\overrightarrow{CD} = \frac{1}{2}\overrightarrow{BA}$ .

Plot the point  $D$  on the grid above. [1]

(c) What name is given to the shape formed by the points  $A$ ,  $B$ ,  $C$  and  $D$ ?

Answer(c) ..... [1]

9 Solve the simultaneous equations.

$$2x + y = 4$$

$$3x + 2y = 5$$

*Answer*  $x = \dots\dots\dots$

$y = \dots\dots\dots$  [3]

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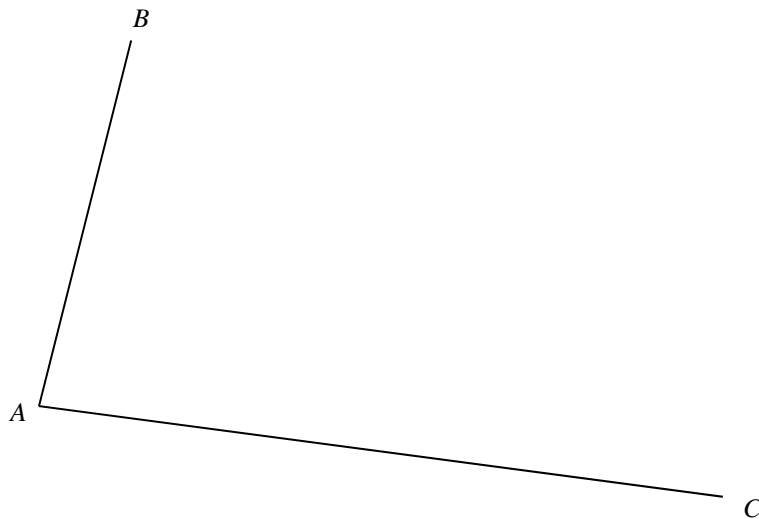
10 A tourist changes \$500 to euros (€) when the exchange rate is €1 = \$0.8077.

Calculate the amount he receives.  
Give your answer correct to 2 decimal places.

*Answer*  $\dots\dots\dots$  [3]

---

11



**Using straight edge and compasses only** construct the locus of points that are equidistant from the lines  $AB$  and  $AC$ .

**Show all your construction arcs clearly.** [2]

- 
- 12 The area of a semi-circle is  $119.2 \text{ cm}^2$ .  
Calculate the radius of the circle.

*Answer* ..... [3]

---

- 13 A girl travels 3 miles to visit her friend, completing the journey in 1 hour.  
She finds her friend is not at home, and immediately makes the return journey at 2 miles per hour.

- (a) Calculate how long the return journey took.

*Answer(a)* ..... [1]

- (b) Calculate the **average** speed for her entire journey.

*Answer(b)* ..... [2]

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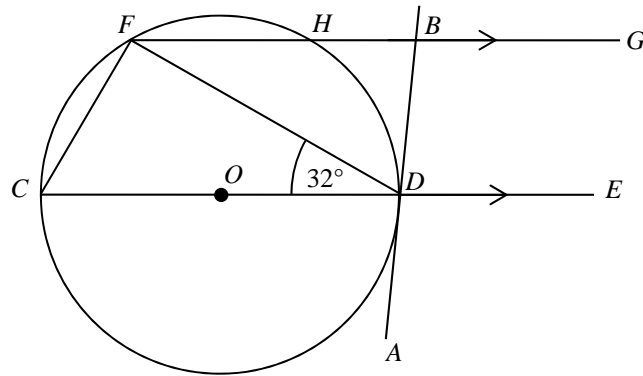
- 14 (a) Factorise  $6p^3 + 2pq$

*Answer(a)* ..... [1]

- (b) Simplify completely  $5(3x - y) - 7(8x - 5y)$

*Answer(b)* ..... [3]

---



The line  $AB$  is tangent, at  $D$ , to a circle centre  $O$ .  
 The line  $CE$  passes through the centre of the circle and is parallel to the line  $FG$ .  
 Angle  $ODF = 32^\circ$ .

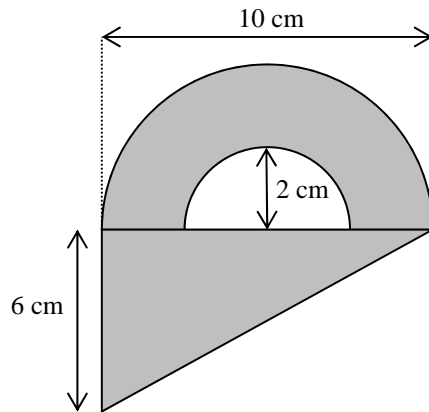
Write down the size of the following angles.  
 In each case give a reason for your answer.

(a) Angle  $DFG = \dots\dots\dots$  because  $\dots\dots\dots$   
 $\dots\dots\dots$  [2]

(b) Angle  $DCF = \dots\dots\dots$  because  $\dots\dots\dots$   
 $\dots\dots\dots$  [2]

(c) Angle  $FDB = \dots\dots\dots$  because  $\dots\dots\dots$   
 $\dots\dots\dots$  [2]





The logo above is made up of a triangle and a semi-circle with a smaller semi-circle removed.

Calculate the shaded area.

*Answer* ..... [3]

- 17** Tiles labelled with the letters M A T H E M A T I C S are placed in a bag.  
One letter is selected at random.

Calculate the probability of the following events

- (a) Drawing an M.

*Answer(a)* ..... [1]

- (b) Drawing an M or a T.

*Answer(b)* ..... [1]

- (c) Drawing a vowel.

*Answer(c)* ..... [2]

---

- 18** (a) Write down all the common factors of 36 and 45.

*Answer(a)* ..... [2]

- (b) Write down the smallest number which is a multiple of both 25 and 15.

*Answer(b)* ..... [2]

---

**19** The length of a rectangle is 5 cm, the width is 10 cm. Both measurements are to the nearest cm.

**(a)** Write down the upper bound for the length of the rectangle.

*Answer(a)* .....cm [1]

**(b)** Write down the lower bound for the width of the rectangle.

*Answer(b)* .....cm [1]

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## Cambridge IGCSE Mathematics Core Practice Book

### Example Practice Paper 1

#### Mark Scheme

**Key:** A – Accuracy marks awarded for a correct answer seen.  
 M – Method marks awarded for clear attempt to apply correct method.  
 oe – Or Equivalent.  
 “ ” – allow M marks for methods that include wrong answers from previous results.

1	(a)	0.304	A1
	(b)	$2.169 \times 10^2$	A1
2		$35\% < 0.357 < \frac{4}{11}$	A1
3		$253 - 180$	M1
		$73^\circ$	A1
4		$650 \times 0.67$	M1
		\$435.5(0)	A1
5	(a)	24; $a^6$	A1 A1
	(b)	$3 - 4 - 5$ (manipulating powers)	M1
		$4b^{-6}$ or $\frac{4}{b^6}$	A1
6		$\frac{28}{5} \times \frac{3}{5}$	M1
		$\frac{84}{25}$	A1
7	(a)	7	A1
	(b)	22.5	A1
8	(a)	$\begin{pmatrix} 4 \\ -2 \end{pmatrix}$	A1 A1
	(b)	Point correctly plotted at co-ordinates (6, 5)	A1
	(c)	Trapezium	A1
9		$4x + 2y = 8$ oe	M1
		$x = 3; y = -2$	A1 A1
10		$500 \div 0.8077$	M1
		619.0417234...	A1

		€619.04 (2dp)	A1
11		Arcs same distance from $A$ on $AB$ and $AC$	M1
		Arcs correctly identifying point on angle bisector and angle bisector drawn	M1
12		$119.2 \times 2 \div \pi = 75.88507\dots$	M1
		$\sqrt{75.88507\dots}$	M1
		8.71	A1
13	(a)	$3 \div 2 = 1.5$ hours	A1
		$(3 + 3) \div (1 + 1.5)$	M1
	(b)	2.4 mph	A1
14	(a)	$2p(3p^2 + q)$	A1
	(b)	$15x - 5y$	M1
		$-56x + 35y$	M1
		$-41x + 30y$	A1
15	(a)	$32^\circ$ ; alternate angles	A1 A1
	(b)	$58^\circ$ ; angle in a semi-circle (angles in a triangle)	A1 A1
	(c)	$58^\circ$ ; tangent perpendicular to radius	A1 A1
16		$\frac{1}{2} \times 6 \times 10 = 30$	M1
		$\pi \times 5^2 - \pi \times 2^2 = 65.9734\dots$	M1
		$30 + (65.9734\dots) \div 2 = 63.0$	A1
17	(a)	$\frac{2}{11}$	A1
	(b)	$\frac{4}{11}$	A1
	(c)	$\frac{4}{11}$	A1 A1
18	(a)	1; 3, 9	A1 A1
	(b)	Multiple of 25 and $15 \geq 75$ ; 75	A1 A1
19	(a)	5.5 cm (accept 4.999... or 4.9)	A1
	(b)	9.5 cm	A1
			<b>Total: 56</b>

# CAMBRIDGE

NAME

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**Cambridge IGCSE Mathematics Core Practice Book**

**Example Practice Paper 3**

**2 hours**

**PLEASE NOTE: this example practice paper contains *exam-style* questions only**

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## **READ THESE INSTRUCTIONS FIRST**

Answer **all** questions.

Working for a question should be written below the question.

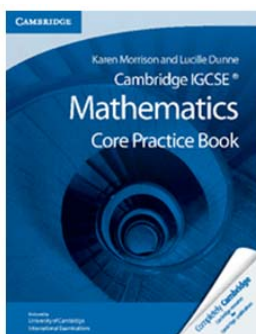
If the answer is not exact but a degree of accuracy has not been provided, give the answer as follows:

- to three significant figures for all values, except
- to one decimal place for degrees
- for  $\pi$ , use either your calculator value or 3.142.

The number of marks is given in brackets [ ] next to each question or part question.

The total of the marks for this paper is 104.

**PLEASE NOTE: this practice examination paper has been written in association with the below publication and is not an official exam paper:**



Paperback 9781107609884

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1

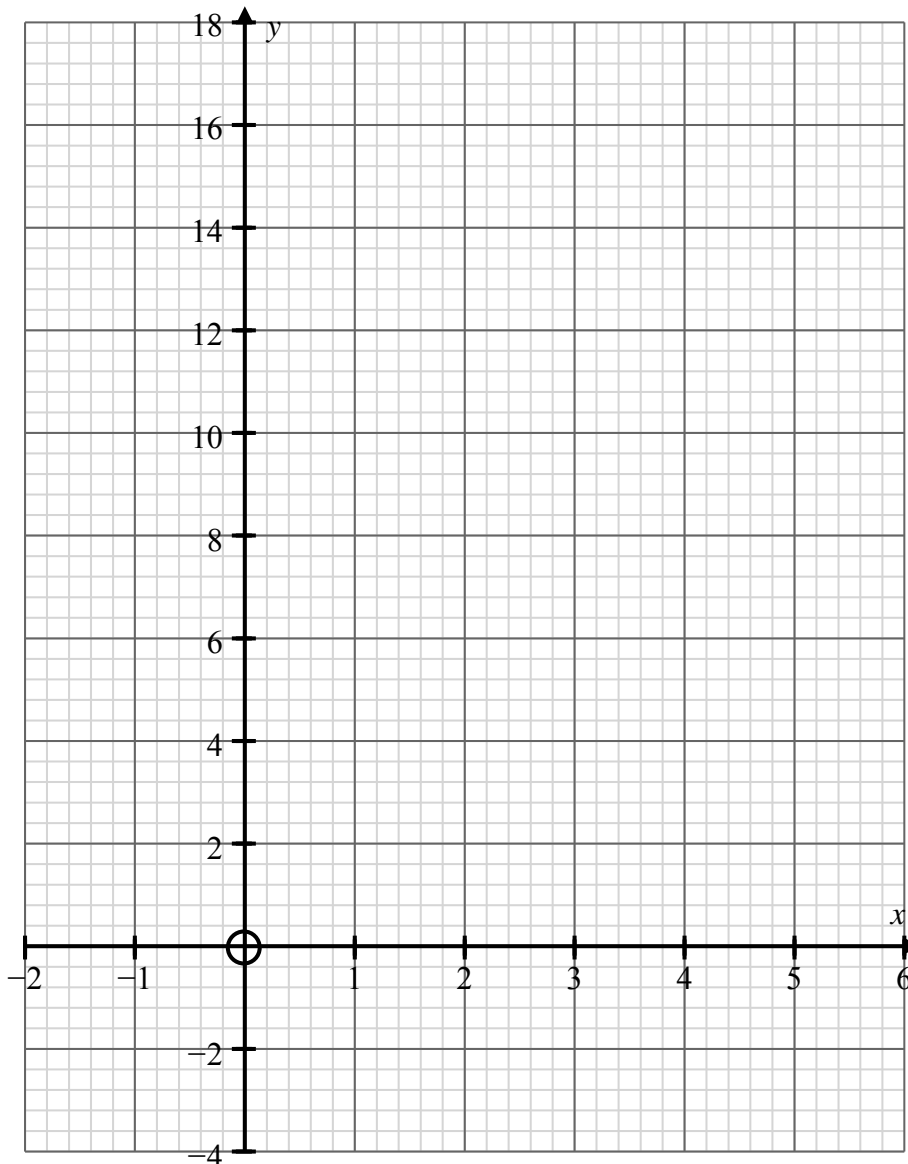
$$y = x^2 - 3x - 1$$

(a) Complete the table of values for this equation.

$x$	-2	-1	0	1	2	3	4	5	6
$y$				-3	-3			9	

[3]

(b) On the grid below, draw the graph of  $y = x^2 - 3x - 1$  for  $-2 \leq x \leq 6$ .



[4]

2

(c) (i) Write down the co-ordinate of the lowest point of the graph.

*Answer(c)(i)* (....., .....) [2]

(ii) Write down the solutions of the equation  $x^2 - 3x - 1 = 0$ .

*Answer(c)(ii)*  $x = \dots\dots\dots$  or  $x = \dots\dots\dots$  [2]

(d) (i) On the grid, draw the straight line with gradient 2 that passes through the origin for  $-2 \leq x \leq 6$ . [2]

(ii) Write down the equation of your line in the form  $y = mx + c$ .

*Answer(d)(ii)*  $y = \dots\dots\dots$  [2]

(iii) Write down the co-ordinates of the points where the straight line intersects the graph of  $y = x^2 - 3x - 1$ .

*Answer(d)(iii)* (....., .....) and (....., .....) [2]

---

2

$$T = \frac{x+2}{n}$$

(a) Find  $T$  when  $x = -23$  and  $n = 7$ .

*Answer(a)*  $T = \dots\dots\dots$  [2]

(b) Find  $x$  when  $T = 81$  and  $n = 4$ .

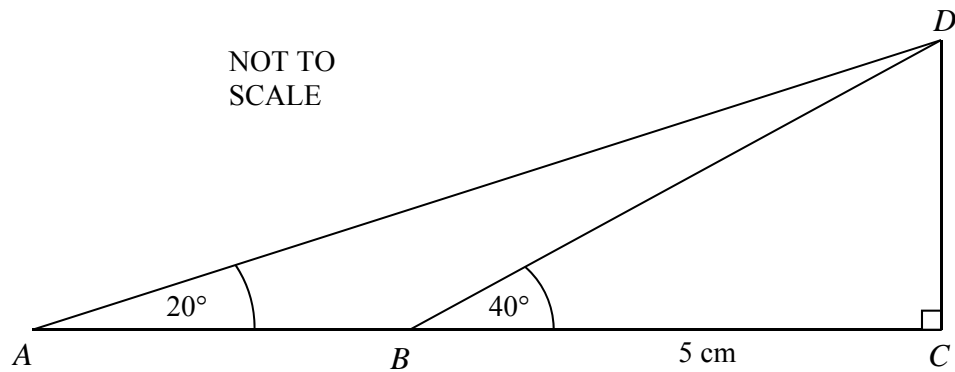
*Answer(b)*  $x = \dots\dots\dots$  [2]

(c) Make  $x$  the subject of the formula  $T = \frac{x+2}{n}$ .

*Answer(c)*  $x = \dots\dots\dots$  [2]

---





The diagram shows four points  $A$ ,  $B$ ,  $C$  and  $D$ .  
 Angle  $CAD = 20^\circ$  and angle  $CBD = 40^\circ$ .  
 $BC = 5\text{ cm}$  and  $AC$  and  $DC$  are perpendicular.

- (a) (i) Calculate the size of angle  $ABD$ .

Answer(a)(i) Angle  $ABD = \dots\dots\dots$  [2]

- (ii) Calculate the size of angle  $ADB$ .

Answer(a)(ii) Angle  $ADB = \dots\dots\dots$  [2]

- (iii) What is the mathematical name for triangle  $ABD$ ?

Answer(a)(iii)  $\dots\dots\dots$  [2]

**(b) (i)** Use trigonometry to calculate the length of  $DC$ .

*Answer(b)(i)*  $DC = \dots\dots\dots\text{cm}$  [2]

**(ii)** Use trigonometry to calculate the length of  $AC$ .

*Answer(b)(ii)*  $AC = \dots\dots\dots\text{cm}$  [2]

**(iii)** What is the length of  $AB$ ?

*Answer(b)(iii)*  $AB = \dots\dots\dots\text{cm}$  [1]

**(c)** Calculate the length  $BD$ .

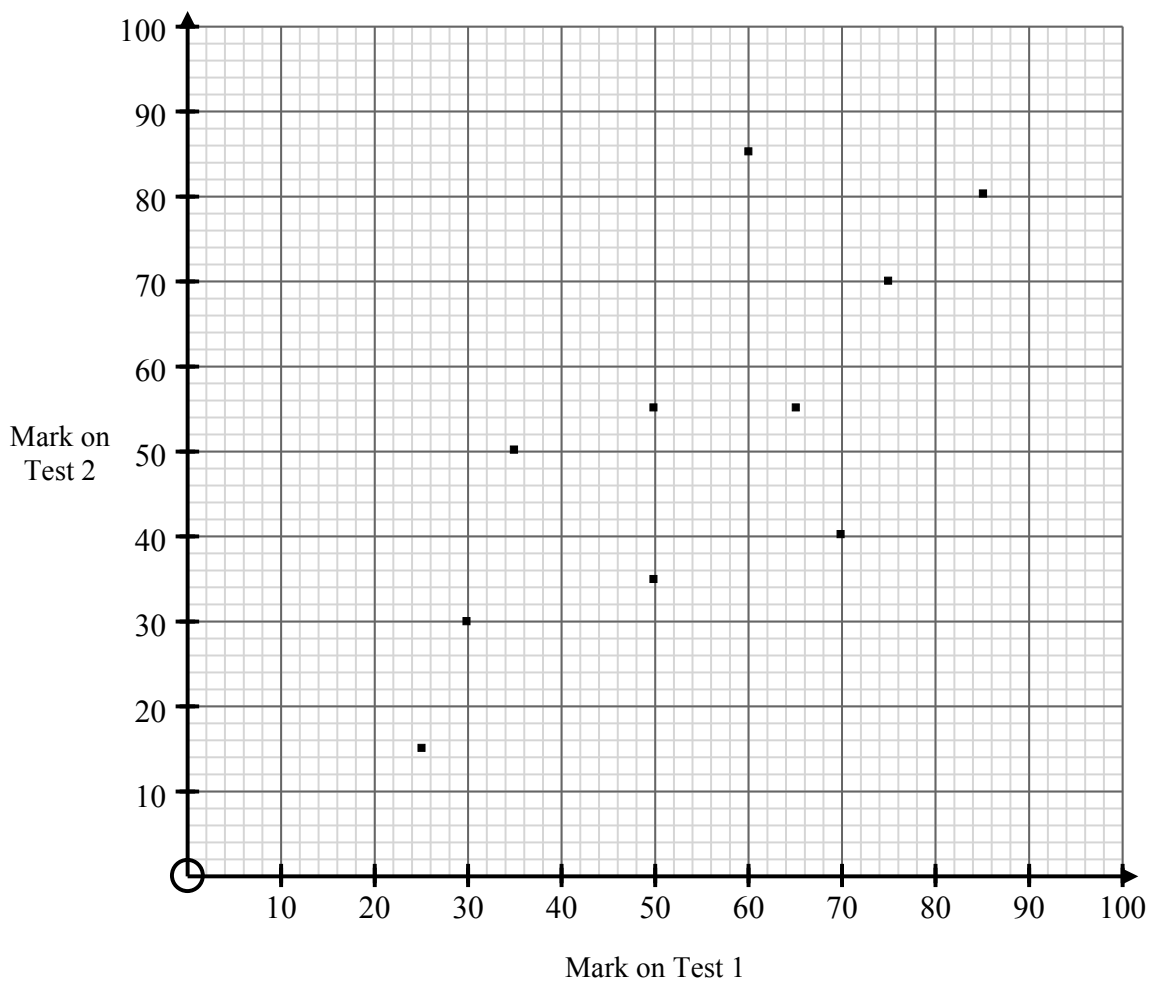
*Answer(c)*  $BD = \dots\dots\dots\text{cm}$  [2]

---

- 4 The table shows the marks obtained (as a percentage) by 20 students in two tests. One test was taken at the start of the year, and one at the end of the year.

Test 1 %	75	50	30	25	70	50	60	35	65	85
Test 2 %	70	55	30	15	40	35	85	50	55	80
Test 1 %	20	60	70	50	40	80	55	75	60	74
Test 2 %	36	65	80	45	40	65	62	85	45	55

- (a) Complete the scatter diagram below to show this information. The first 10 points have been plotted for you.



[3]

- (b) What type of correlation does the scatter diagram show?

Answer(b) ..... [1]

(c) (i) Find the range of marks in **Test 1**.

*Answer(c)(i)* ..... % [1]

(ii) Find the mean mark in **Test 1**.

*Answer(c)(ii)* ..... % [3]

(d) (i) Find the mode for the mark in **Test 2**.

*Answer(d)(i)* ..... [1]

(ii) Find the median for the mark in **Test 2**.

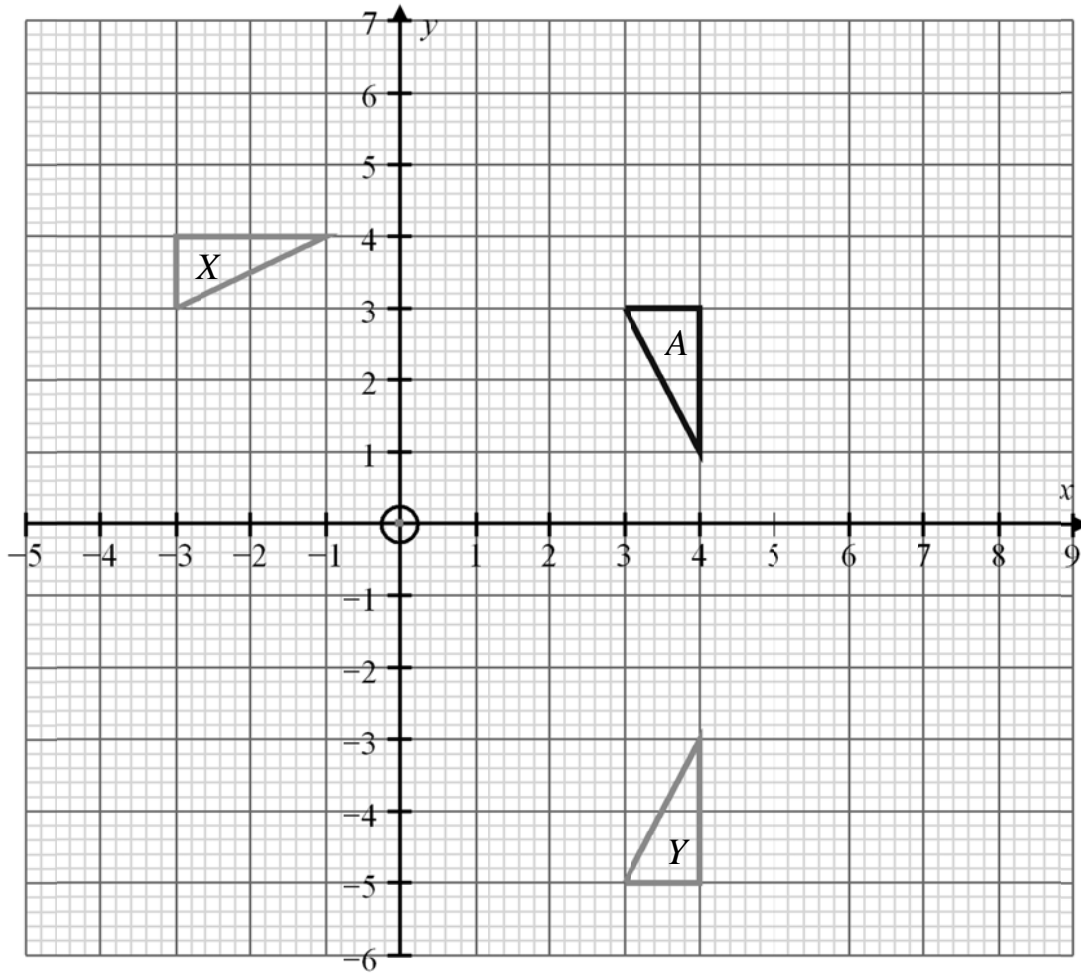
*Answer(d)(ii)* ..... [1]

One of the 20 students is chosen at random.

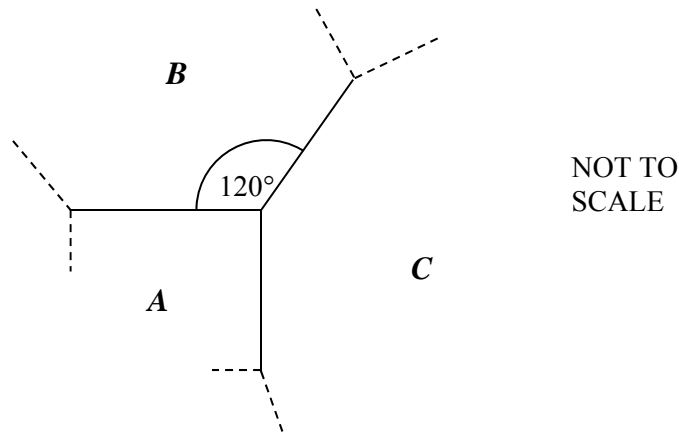
(e) Write down the probability that the student scored **less than** 50% in the first test.

*Answer(e)* ..... [1]

---



- (a) On the grid, draw the image of
- (i) shape A reflected in the y-axis. Label the image *B*. [2]
  - (ii) shape A after enlargement, scale factor 2, centre origin. Label the image *C*. [2]
  - (iii) shape A after translation by  $\begin{pmatrix} 4 \\ -6 \end{pmatrix}$ . Label the image *D*. [2]
- (b) Describe fully the **single** transformation which maps
- (i) shape A onto shape X,  
 ..... [3]
  - (ii) shape A onto shape Y.  
 ..... [2]



The diagram shows three **different** regular polygons touching each other. Only parts of each shape are shown. Shape A is a square and the interior angle of shape B is  $120^\circ$ .

(a) Mark the interior angle of the square using the correct mathematical symbol. [1]

(b) (i) Work out the exterior angle of shape B.

Answer(b)(i) ..... [1]

(ii) Work out how many sides shape B has.

Answer(b)(ii) ..... [2]

(iii) Write down the mathematical name for shape B.

Answer(b)(iii) ..... [1]

(c) (i) Work out the exterior angle of shape C.

Answer(c)(i) ..... [2]

(ii) How many sides does shape C have?

Answer(c)(ii) ..... [2]

7 John invests \$1000 in a bank account at **Bank A**, which earns interest.

(a) After 1 year, John has \$1050 in the account.

(i) What was the interest rate that John received from the bank?

*Answer(a)(i)* ..... [2]

John withdraws the money and moves it to **Bank B**.

**Bank B** pays 7.5% per year **compound** interest.

(ii) Calculate the amount of money John has after it has been in **Bank B** for 4 years.

*Answer(a)(ii)* ..... [2]

(iii) Calculate how much interest John earned in total from **both** banks.

*Answer(a)(iii)* ..... [2]

(iv) Calculate how much the total interest is, as a percentage of his original \$1000.

*Answer(a)(iv)* ..... [2]

- (b) John spends \$500 of the money on new sheep for his farm.  
Sheep are sold in lots of 5. Each lot costs \$134.

(i) How many sheep can John buy?

*Answer(b)(i)* ..... [3]

(ii) John sells each sheep for \$40.

What is John's percentage profit?

*Answer(b)(ii)* ..... [3]

---



8 (a) Tamsin thinks of a number, doubles it then adds 5. The result is 17.

(i) Write down an equation in  $x$  to represent this information.

*Answer(a)(i)* ..... [1]

(ii) Solve the equation to find the value of  $x$ .

*Answer(a)(ii)* ..... [2]

(b) Amir thinks of a number, adds 9, then doubles.  
The result is **three times** the number he first thought of.

(i) Write down an equation in  $x$  to represent this information.

*Answer(b)(i)* ..... [2]

(ii) Solve the equation to find the value of  $x$ .

*Answer(b)(ii)* ..... [2]

(c) Chan-An thinks of a number. He multiplies it by 3, then adds 1.  
The result is the same as if he had multiplied by 4 and added 6.

(i) Write down an equation in  $x$  to represent this information.

*Answer(c)(i)* ..... [2]

(ii) Solve the equation to find the value of  $x$ .

*Answer(c)(ii)* ..... [3]

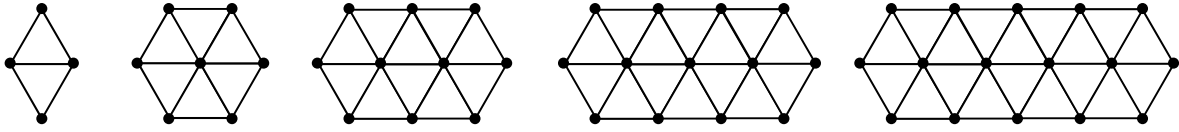


Diagram 1

Diagram 2

Diagram 3

Diagram 4

Diagram 5

The diagram show a pattern of triangles of dots.

(a) Complete the table below.

Diagram number	1	2	3	4	5
Number of triangles	2	6	10		
Number of dots	4	7	10		

[4]

(b) Work out the number of triangles and the number of dots in the 8th diagram.

Answer (b) Number of triangles = ..... , Number of dots = ..... [2]

(c) (i) Write down an expression for the number of triangles in the  $n$ th diagram.

Answer(c)(i) ..... [2]

(ii) Write down an expression for the number of dots in the  $n$ th diagram.

Answer(c)(ii) ..... [2]

(d) Add together the expressions for the triangles and dots in the  $n$ th diagram.

Write your answer as simply as possible.

Answer(d) ..... [1]

## Example Practice Paper 3

### Mark Scheme

**Key:** A – Accuracy marks awarded for a correct answer seen.  
 M – Method marks awarded for clear attempt to apply correct method.  
 oe – Or Equivalent  
 “ ” – allow M marks for methods that include wrong answers from previous results.

1	(a)	9, 3, -1, -3, -3, -1, 3, 9, 17 (2 correct; 4 correct; All correct)	A1 A1 A1
	(b)		Shape A1 Points A1 Smooth A1 Gradient continuous A1
	(c)(i)	(1.5, -3.2) allow $\pm 1$ square on y co-ordinate	A1 A1
	(c)(ii)	-0.3, 3.3 allow $\pm \frac{1}{2}$ square	A1 A1

	(d)(i)		Gradient A1  Through origin A1
	(d)(ii)	$y = 2x + c$	A1
		$y = 2x \quad (c = 0)$	A1
	(d)(iii)	$(-0.2, -0.4)$ , $(5.2, 10.4)$ (allow $\pm \frac{1}{2}$ square)	A1 A1

2	(a)	$\frac{-23 + 2}{7}$	M1
		-3	A1
	(b)	$81 = \frac{x + 2}{4}$	M1
		322	A1
	(c)	$Tn = x + 2$	M1
		$x = Tn - 2$	A1

3	(a)(i)	$180 - 40$	M1
		$140^\circ$	A1
	(a)(ii)	$180 - 140 - 20$	M1
		$20^\circ$	A1
	(a)(iii)	Isosceles	A1 A1
	(b)(i)	$\tan 40^\circ = \frac{DC}{5}$	M1
		$DC = 4.20 \text{ cm}$	A1
	(b)(ii)	$\tan 20^\circ = \frac{4.1955..}{AC}$	M1
		$AC = 11.5 \text{ cm}$	A1
	(b)(iii)	$"11.5" - 5 = 6.5$	A1
	(c)	$BD = AB = 6.5 \text{ cm}$ (accept use of Pythagoras)	A1 A1

4	(a)	Correct points plotted	A3
	(b)	Positive correlation	A1
	(c)(i)	$85 - 20 = 65$	A1
	(c)(ii)	1129	M1
		$\frac{1129}{20}$	M1
		56.45	A1
	(d)(i)	55	A1
	(d)(ii)	55	A1
	(e)	$\frac{5}{20}$ oe	A1

5	(a)		A2 A2 A2
	(b)(i)	Rotation, $90^\circ$ anti-clockwise, about origin	A1 A1 A1
	(b)(ii)	Reflection, in line $y = -1$	A1 A1

6	(a)	Correct symbol	A1
	(b)(i)	$180 - 120 = 60^\circ$	A1
	(b)(ii)	$\frac{360}{60}$	M1
		6	A1
	(b)(iii)	Hexagon	A1
	(c)(i)	$120 - 90$ oe	M1
		$30^\circ$	A1
	(c)(ii)	$\frac{360}{30}$	M1
		12	A1

7	(a)(i)	$\frac{50}{1000} \times 100$	M1
		5%	A1
	(a)(ii)	$1050 \times 1.075^4$	M1
		\$1402.24	A1
	(a)(iii)	$1402.24 - 1000$	M1
		402.24	A1
	(a)(iv)	$\frac{402.24}{1000} \times 100$	M1
		40.2%	A1
	(b)(i)	$\frac{500}{134} = 3.73\dots$	M1
		$3 \times 5$	M1
		15 sheep	A1
	(b)(ii)	$15 \times \$40 = \$600$	M1
		$\frac{600}{(3 \times 134)} = 1.49\dots$ (also acceptable: $\frac{135}{5} = 26.80$ , $\frac{40}{26.80} = 1.49\dots$ or: $\frac{134}{5} = 26.80$ , $40 - 26.80 = 13.2$ , $\frac{13.2}{26.80} \times 100 = 49\%$	M1
		49% profit	A1

8	(a)(i)	$2x + 5 = 17$	A1
	(a)(ii)	$2x = 12$	M1
		$x = 6$	A1
	(b)(i)	$2(x + 9) = 3x$	A1 A1
	(b)(ii)	$2x + 18 = 3x$	M1
		$x = 18$	A1
	(c)(i)	$3x + 1 = 4x + 6$	A1 A1
	(c)(ii)	$1 = x + 6$	M1
		$x = 1 - 6$	M1
		$x = -5$	A1

9	(a)	Triangles: 14, 18	A1 A1
		Dots: 13, 16	A1 A1
	(b)	30, 25	A1 A1
	(c)(i)	$4n - 2$	A1 A1
	(c)(ii)	$3n + 1$	A1 A1
	(d)	$7n - 1$	A1

			<b>Total:104</b>
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